

Claims:

1. A process for preparing optically active aldehydes or ketones which have from 3 to 25 carbon atoms and at least one racemizable stereocenter by catalytic dehydrogenation of the corresponding optically active primary or secondary alcohols in the gas phase in the presence of a catalyst.
- 5 2. The process according to claim 1, wherein a catalyst comprising at least one element selected from the group consisting of the elements calcium, zinc and copper is used.
- 10 3. The process according to claim 1 or 2, wherein a catalyst comprising zinc oxide and calcium carbonate is used.
- 15 4. The process according to any of claims 1 to 3, wherein a catalyst whose active component comprises from 30 to 60% by weight of zinc oxide and from 40 to 70% by weight of calcium carbonates is used.
- 20 5. The process according to claim 3 or 4, wherein the calcium carbonate is present in the calcite modification.
6. The process according to any of claims 1 to 5 for preparing branched or unbranched open-chain or monocyclic aldehydes or ketones.
- 25 7. The process according to any of claims 1 to 6 for preparing aldehydes or ketones which have a stereocenter in the α and/or β position relative to the carbonyl group.
8. The process according to any of claims 1 to 7 for preparing optically active 2-methylbutan-1-al, 3,7-dimethyloct-6-en-1-al, 3,7-dimethyloctan-1-al, 8-p-menthen-3-one, p-menthan-3-one, 2-methylcyclohexanone, 3-methylcyclohexanone, 2-methylcyclopentanone, 3-methylcyclopentanone, 2,6-dimethylcyclohexanone or 2,3-dimethylcyclohexanone.
- 30 35 9. The process according to any of claims 1 to 8 for preparing optically active citronellal from optically active citronellol.
10. The process according to any of claims 1 to 9, wherein the enantiomeric excess (ee) of the aldehyde or ketone obtained corresponds to at least 90% of the enantiomeric excess of the alcohol used.

11. The process according to any of claims 1 to 10, wherein the dehydrogenation is carried out at a temperature in the range from 250 to 600°C.

12. A process for preparing optically active menthol by cyclization of citronellal

5 prepared according to any of claims 1 to 11 to form isopulegol and subsequent hydrogenation.

13. The use of optically active citronellal prepared according to any of claims 1 to 12 for preparing optically active menthol.